AMENDMENTS TO THE CLAIMS:

Without prejudice, this listing of the claims replaces all prior versions and listings of the claims in the present application:

LISTING OF CLAIMS:

Claims 1 to 32. (Canceled).

33. (Currently Amended) [~~The~~] A method [~~of claim 27~~] of reducing distortion of optical signal transmission in an optical communication system, [~~further~~] comprising:

providing the optical communication system having at least one section of optical transmission medium which exhibits one of a preferred and a substantially constant birefringence;

transmitting an optical signal in the optical communication system;

measuring a transmission quality of the optical signal of the optical communication system;

transmitting the optical signal indicative of the measured transmission quality to a regulating device;

driving, by the regulating device, a polarization-controlling device to alter the polarization of the optical signal so that the transmission quality is optimized;

using a small coupled-out portion of communication-transmitting luminous flux of the optical signal to determine transmission quality; and

redundantly monitoring the optical communication system by observing parity information extracted from the optical communication system,

wherein when within the at least one section of optical transmission medium, the optical signal propagates only in one of a channel having a high rate of propagation and in a channel having a slow rate of propagation to prevent any splitting or widening of the optical signal.

34. (Currently Amended) The method of claim 33 [27], wherein the optical signal is first transmitted to the polarization-controlling device, then transmitted to the optical transmission medium, then transmitted to a beam splitter, the beam splitter coupling-out luminous flux of the optical signal, then the coupled-out luminous flux of the optical signal is transmitted to a detector which converts the luminous flux into an electric signal, and then the electric signal is transmitted to a measuring device to measure the transmission quality from the electric signal.

35. (Canceled).

36. (New) The method of claim 33, further comprising:

measuring the transmission quality again so that:

if the transmission quality has increased, then resetting by the regulating device the controlling element further in the present direction;

if the transmission quality has decreased, then resetting by the regulating device the controlling element in a different direction;

if the transmission quality evidences insignificant change, then resetting by the regulating device of the polarization-controlling element in a direction orthogonal to a first direction in the parameter space,

wherein the measuring and resetting step is repeated at predefined spaced-apart time intervals to maximize the transmission quality of the optical communication system.

37. (New) The method of claim 36, wherein a polarization-controlling device is connected at the input of the optical communication system.

38. (New) The method of claim 36, wherein the polarization-controlling device includes at least one of a $\lambda/4$ delay element and a $\lambda/2$ delay element, the delay elements being disposed one behind the other and being adjustable to losslessly convert the light into a required polarization state.

39. (New) The method of claim 36, wherein the polarization-controlling device is connected at the output of the optical communication system.

40. (New) The method of claim 36, wherein an analyzer is connected downstream from the polarization-controlling device.